Consolidated Health Informatics

Standards Adoption Report:
MESSAGING

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Summary

Domain: Messaging

Standards Adoption Recommendation: Health Level 7 (HL7) version 2.3+

SCOPE
Includes messaging for order entry, scheduling, medical record/image management, patient administration, observation reporting, financial management, patient care, and public health notification.

RECOMMENDATION
The National Committee on Vital and Health Statistics (NCVHS) report formed the basis of this recommendation. However, CHI is adopting version 2.3+ and recommends moving aggressively toward version 3. The format for version 2.x messages can either be in the traditional form of segment | field or extensible markup language (XML) versions using the American National Standards Institute (ANSI) approved standard representations of these same messages.

OWNERSHIP
HL7 has the copyright.

APPROVALS AND ACCREDITATIONS
HL7 is an ANSI accredited standards development organization. The version adopted by CHI has been approved by full organizational ballot voting.

ACQUISITION AND COST
Hard and computer readable forms of the standards are available from HL7 and cost $50-$500 depending on the specific standard and member status. No cost is associated with using the standard.

Part I – Team & Domain Scope Identification

Target Vocabulary Domain

National Committee on Vital and Health Statistics (NCVHS) Patient Medical Record Information (PMRI) Messaging Standards Recommendations of 2/27/02

Describe the specific purpose/primary use of this standard in the federal health care sector (100 words or less) Adoption of Health Level 7 PMRI messaging standards recommended by NCVHS by federal health care facilitates a common format for the exchange of health care information.

Sub-domains *Identify/dissect the domain into sub-domains, if any. For each, indicate if standards recommendations are or are not included in the scope of this recommendation.*

Domain/Sub-domain	In-Scope (Y/N)
Order Entry	Y
Scheduling	Y
Medical record/Image Management	Y
Patient Administration	Y
Observation Reporting	Y
Financial Management	Y
Patient Care	Y
Public Health Notification	Y

Information Exchange Requirements (IERs) *Using the table at appendix A, list the IERs involved when using this standard.*

Patient Demographic Data
Encounter Clinical Data
Care Management Information
Patient Schedule

Team Members *Team members' names and agency.*

Name	Agency/Department
Steven Steindel	HHS/CDC
Steven Wagner	VA
Nancy Orvis	DoD
Jorge Ferrer	HHS/CMS

Marco Johnson (Alternate)	DoD
Lisa Hines (Alternate)	HHS/CMS
Ken Rubin (Alternate)	VA

Work Period *Dates work began/ended.*

Start	End
May 2002	January 2003

Part II – Standards Adoption Recommendation

Recommendation *Identify the solution recommended.*

The CHI Council adopt Health Level 7 (HL7) Version 2.3 and above version 2.x transaction sets for messaging between federal systems for the following:

- Order Entry
- Scheduling
- Medical record/Image Management
- Patient Administration
- Observation Reporting
- Financial Management
- Patient Care
- Public Health Notification

and emerging HL7 Version 3 standards in areas such as Public Health Notification where Version 2.x messages do not exist. The CHI Council is asked to grandfather current Version 2.2 HL7 messaging now used by the Department of Defense but to encourage all new messaging to use Version 2.3 or above.

The format for Version 2.x message can either be the in the traditional form of segment | field or using eXtensible Markup Language (XML) ANSI approved standard representations of these same messages.

It is further recommended that the CHI Council endorse the rapid movement to HL7 Version 3 standards in the above areas soon after these standards are approved. To help facilitate this recommendation, establishment of a subteam to develop guidelines for an ever-greening process that includes testing and validation of new standards is encouraged.

Ownership Structure *Describe who "owns" the standard, how it is managed and controlled.*

Health Level Seven is one of several ANSI-accredited Standards Developing Organizations (SDOs) operating in the healthcare arena. Headquartered in Ann Arbor, MI, Health Level Seven is like most of the other SDOs in that it is a not-for-profit volunteer organization. Its members-- providers, vendors, payers, consultants, government groups and others who have an interest in the development and advancement of clinical and administrative standards for healthcare—develop the standards. Like all ANSI-accredited SDOs, Health Level Seven adheres to a strict and well-defined set of operating procedures that ensures consensus, openness and balance of interest. Members of Health Level Seven are known collectively as the Working Group, which is organized into technical committees and special interest groups. The technical committees are directly responsible for the content of the Standards. Special interest groups serve as a test bed for exploring new areas that may need coverage in HL7's published standards.

Summary Basis for Recommendation *Summarize the team's basis for making the recommendation (300 words or less).*

The NCVHS sent a letter to the Secretary, DHHS in February 2002 recommending adoption of specific standards based on current status and the August 2000 report. It is this letter that formed the basis for the above recommendations. Interoperability between federal health care systems was the primary factor in forming these recommendations to the CHI Council and any deviations from the NCVHS recommendations reflect this consideration.

Conditional Recommendation *If this is a conditional recommendation, describe conditions upon which the recommendation is predicated.*

Not applicable

Approvals & Accreditations

Indicate the status of various accreditations and approvals:

Approvals & Accreditations	Yes/Approved	Applied	Not Approved
Full SDO Ballot	Y	Y	
ANSI	Y	Y	

Options Considered *Inventory solution options considered.*

During the period from December 1998 through August 2000 the Computerized Patient Record (CPR) Workgroup of the Standards and Security Subcommittee of the National Committee for Vital and Health Statistics (NCVHS) investigated the standards available for patient medical record information and released a report to the Secretary of the Department of Health and Human Services (DHHS) on the current status. Review of this document by the workgroup indicated it was a good general description of both Standard Development Organizations and the standards they supply. A more specific inventory, maintained by the ANSI Health Informatics Standard Board (ANSI-HISB) did not indicate any significant additions to the NCVHS report. Hence, the standards considered by the workgroup were those found in that report.

Current Deployment

HL7 has a great deal of support in the user community and 1999 membership records indicate over 1,600 total members, approximately 739 vendors, 652 healthcare providers, 104 consultants, and 111 general interest/payer agencies. HL7 standards are also widely

implemented though complete usage statistics are not available. In a survey of 153 chief information officers in 1998, 80% used HL7 within their institutions, and 13.5% were planning to implement HL7 in the future. In hospitals with over 400 beds, more than 95% use HL7. As an example, one vendor has installed 856 HL7 standard interfaces as of mid 1996. In addition the HL7 standard is being used and implemented internationally including Canada, Australia, Finland, Germany, The Netherlands, New Zealand, and Japan. Anecdotal information indicates that the major vendors of medical software, including Cerner, Misys (Sunquest), McKesson, Siemens (SMS), Eclipsys, AGFA, Logicare, MRS, Tamtron, IDX (Extend and CareCast), and 3M, support HL7. The most common use of HL7 is thought to be admission/discharge/transfer (ADT) interfaces, followed closely by laboratory results, orders, and then pharmacy. HL7 is also used by many federal agencies including VHA, DoD and HHS/CDC, hence federal implementation time and cost is minimized. The widespread and long-standing use of HL7 leads to the workgroup conclusion that this is a strong recommendation.

Part III – Adoption & Deployment Information

Provide all information gathered in the course of making the recommendation that may assist with adoption of the standard in the federal health care sector. This information will support the work of an implementation team.

Existing Need & Use Environment

Measure the need for this standard and the extent of existing exchange among federal users. Provide information regarding federal departments and agencies use or non-use of this health information in paper or electronic form, summarize their primary reason for using the information, and indicate if they exchange the information internally or externally with other federal or non-federal entities.

Column A: Agency or Department Identity (name)
Column B: Use data in this domain today? (Y or N)
Column C: Is use of data a core mission requirement? (Y or N)
Column D: Exchange with others in federal sector now? (Y or N)
Column E: Currently exchange paper or electronic (P, E, B (both), N/Ap)
Column F: Name of paper/electronic vocabulary, if any (name)
Column G: Basis/purposes for data use (research, patient care, benefits)

Department/Agency	B	C	D	E	F	G
Department of Veterans Affairs						
Department of Defense						
HHS Office of the Secretary						
Administration for Children and Families (ACF)						
Administration on Aging (AOA)						
Agency for Healthcare Research and Quality (AHRQ)						
Agency for Toxic Substances and Disease Registry (ATSDR)						
Centers for Disease Control and Prevention (CDC)						

Centers for Medicare and Medicaid Services (CMS)						
Food and Drug Administration (FDA)						
Health Resources and Services Administration (HRSA)						
Indian Health Service (IHS)						
National Institutes of Health (NIH)						
Substance Abuse and Mental Health Services Administration (SAMHSA)						
Social Security Administration						
Department of Agriculture						
State Department						
US Agency for International Development						
Justice Department						
Treasury Department						
Department of Education						
General Services Administration						
Environmental Protection Agency						
Department of Housing & Urban Development						
Department of Transportation						
Homeland Security						

Number of Terms

Not Applicable

Range of Coverage

Not Applicable – messaging standards

Acquisition: *How are the data sets/codes acquired and use licensed?*

Standards are available from HL7. HL7 asserts and retains copyright in all works contributed by members and non-members relating to all versions of the Health Level Seven standards and related materials unless other arrangements are specifically agreed upon in writing. No use restrictions are applied.

Cost

What is the direct cost to obtain permission to use the data sets/codes? (licensure, acquisition, other external data sets required, training and education, updates and maintenance, etc.)

HL7 sells hard and computer readable forms of the various standard versions, cost from $50 - $500 depending on specific standard and member status. Draft versions of standards are available to all from their website. No specific cost is associated with using the standards.

Training is offered through HL7 and others at varying costs from several hundred to several thousand-dollars/per person. Consultation services are available at standard industry cost for training, update instillation and maintenance.

Systems Requirements

Is the standard associated with or limited to a specific hardware or software technology or other protocol?

No.

Guidance: *What public domain and implementation and user guides, implementation tools or other assistance is available and are they approved by the SDO?*

HL7 is in widespread use and has many implementation guides and tools, some in the public domain and some not. See www.hl7.org for more details.

Is a conformance standard specified? Are conformance tools available?
A standard is not specified. Conformance tools are not available through the SDO, but private sector tools do exist.

Maintenance: *How do you coordinate inclusion and maintenance with the standards developer/owners?*
Voluntary upgrade to new versions of standards, generally by trading partner agreement. Messages are transmitted with version number and use of prior versions is generally supported for a period of time after introduction of a new version.

What is the process for adding new capabilities or fixes?
Continual review of in-use requirements of standard at organization meetings held three times/year.

What is the average time between versions?
Various, but approximately yearly.

What methods or tools are used to expedite the standards development cycle?
None. Occurs at meetings held three times/year and in the workgroups between meetings. Standards development can be quite lengthy.

How are local extensions, beyond the scope of the standard, supported if at all?
Yes, but not encouraged (Z segment).

Customization: *Describe known implementations that have been achieved without user customization, if any.*

See implementation Timeframe below.

Mapping Requirements

Not applicable – messaging standard.

Compatibility

Identify the extent of off-the-shelf conformity with other standards and requirements:

Conformity with other Standards	Yes (100%)	No (0%)	Yes with exception
NEDSS requirements	**Y**		
HIPAA standards	**Y**		
HL7 2.x	**Y**		

Implementation Timeframe

The earliest version of HL7 endorsed by the NCVHS is 2.2. The earliest version

recommended for use by the workgroup is version 2.3. In doing so, we considered that DoD presently uses Version 2.2 from and within DoD legacy systems. This internal messaging would not be impacted by this recommendation. DoD is also doing all currently agreed upon external messaging with VHA using version 2.3 messages and this would not be impacted by the version change. We have been advised, however, that if messaging in a new area of clinical information was requested, DoD may have to supply that information from a legacy system and would not be able to meet the requirement communicating with version 2.3 messages. DoD requests continued use of the older standard until new systems are introduced. As DoD introduces new systems applications over the next few years and plans to replace the old applications around approximately 2007, the workgroup did not see this as a problem and recommends grand-fathering of version 2.2 for DoD use for new messages.

Gaps

The workgroup notes that a gap may be developing regarding the use of XML in future health care transactions. The introduction of XML in version 3 of HL7 may simplify the implementation of that standard but lack of coordination of healthcare XML messaging between other standards, such as the developing XML versions of the X12 transactions, could hinder interoperability. ANSI-HISB is investigating this issue and trying to coordinate efforts in this area. These efforts would be aided by support from the Council.

Obstacles

While the workgroup supports the use of HL7 messaging standards for clinical transactions, it notes that a large gap exists between the message standard and the ability to understand and use the contents of the message. Version 2.x HL7 messages are currently implemented with a high degree of variability in content of the elements. Some of this difference relates to the use of local codes or non-standard use of publicly available codes and some involves subtle differences in the interpretation of the element's meaning. Version 3 of HL7 has a goal of increasing the ability to understand a received message by addressing these two broad issues through the use of an XML message structure and a Reference Information Model (RIM), though this has not been demonstrated. The CHI Council needs to realize that the acceptance of the message standard without standardization of code sets between users will not result in increased interoperability and a large gap will exist.

Appendix A

Information Exchange Requirements (IERs)

Information Exchange Requirement
Customer Demographic Data

Encounter (Administrative) Data
Beneficiary Financial / Demographic Data
Customer Health Care Information
Care Management Information
Customer Risk Factors
Referral Information
Body of Health Services Knowledge
Tailored Education Materials
Patient Schedule
Beneficiary Tracking Information
MHS Direction
Provider Demographics
Patient Satisfaction Information
Case Management Information
Cost Accounting Information
Population Member Health Data
Population Risk Reduction Plan
Provider Metrics
Improvement Strategy
Resource Availability
Beneficiary Inquiry Information
Labor Productivity Information
Clinical Guidelines
Customer Approved Care Plan